

WHAT IS CLAIMED IS:

1. A method of manufacturing a microstructure, comprising: a step of forming a thermally crosslinked first positive photosensitive material layer on a substrate, a step of forming on the first positive photosensitive material layer a second positive photosensitive material layer different from the first positive photosensitive material layer in a photosensitive wavelength range, a step of firstly forming a pattern on the second positive photosensitive material layer by decomposing and then developing only a desired area in the second positive photosensitive material layer, and a step of secondly forming a pattern different from that formed on the second positive photosensitive material layer on the first positive photosensitive material layer by decomposing and then developing a predetermined area in the first positive photosensitive material layer, wherein
  - the first positive photosensitive material layer is an ionizing radiation decompositive positive resist composed of a methacrylic copolymer composite mainly containing a methacrylate and also containing methacrylic acid as a thermal crosslinking factor, where a methacrylic acid unit is 2 to 30 wt% and copolymer molecular weight is 5,000 to 50,000, and the second positive photosensitive material

layer is an ionizing radiation decompositive positive resist which mainly contains polymethyl isopropenyl ketone.

5           2. The method of manufacturing the microstructure according to Claim 1, wherein the methacrylic copolymer composite is formed by radical polymerization.

10           3. The method of manufacturing the microstructure according to Claim 2, wherein the first positive photosensitive material layer is thermally crosslinked by dehydration reaction.

15           4. A method of manufacturing a liquid discharge head comprising: a step of forming a mold pattern by a removable resin in a liquid channel forming portion on a substrate on which is formed a liquid discharge energy generating element, and a step of coating and  
20 then curing a coating resin layer on the substrate so as to coat the mold pattern to form a liquid channel by dissolving away the mold pattern,

          wherein the step of forming the mold pattern successively comprises:

25           a step of forming on the substrate a first positive photosensitive material layer thermally crosslinked by means of a thermal crosslinking

reaction;

a step of forming on the first positive  
photosensitive material layer a second positive  
photosensitive material layer different from the  
5 first positive photosensitive in a photosensitive  
wavelength range;

a step of forming a desired pattern on the  
second positive photosensitive material layer by  
decomposing and then developing only a desired  
10 pattern on the second positive photosensitive  
material layer by means of an ionizing radiation for  
exposing the second positive photosensitive material  
layer onto the substrate on which two layers of the  
positive photosensitive material layers are formed;  
15 and

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a step of forming another desired pattern on  
the first positive photosensitive material layer by  
decomposing and then developing a predetermined area  
on the first positive photosensitive material layer  
20 by means of an ionizing radiation for exposing the  
first positive photosensitive material layer onto the  
substrate on which the desired pattern is formed on  
the second positive photosensitive material layer,  
and

25 the first positive photosensitive material  
layer is an ionizing radiation decompositive positive  
resist composed of a methacrylic copolymer composite

mainly containing a methacrylate and also containing methacrylic acid as a thermal crosslinking factor, where a methacrylic acid unit is 2 to 30 wt% and copolymer molecular weight is 5,000 to 50,000, and

5        the second positive photosensitive material layer is an ionizing radiation decompositive positive resist which mainly contains polymethyl isopropenyl ketone.

10        5. The method of manufacturing the liquid discharge head according to Claim 4, further comprising:

         a step of coating a negative photosensitive coating resin film on the patterned first positive  
15        photosensitive material layer and second positive photosensitive material layer;

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         a step of forming a discharge port portion by exposing and then developing a pattern including a discharge port communicated with the liquid channel  
20        of the negative photosensitive coating resin film;

         a step of decomposing the first positive photosensitive material layer and the second positive photosensitive material layer by irradiating an ionization radiation onto the first and second  
25        positive photosensitive material layers at a wavelength range in which decomposition reaction occurs in the both first and second positive

photosensitive material layers; and

a step of forming the liquid channel by  
immersing the substrate into an organic solvent to  
dissolve away the first and second positive  
5 photosensitive material layers.

6. A liquid discharge head obtained by the  
method of manufacturing according to Claim 4.

10 7. The liquid discharge head according to Claim  
6, wherein a columnar member for trapping dust is  
formed of a material composing the liquid channel in  
the middle of the liquid channel.

15 8. The liquid discharge head according to Claim  
7, wherein the columnar member for trapping dust  
which is formed in the liquid channel does not reach  
the substrate.

20 9. The liquid discharge head according to Claim  
7, wherein a liquid supply port commonly connected to  
each of the liquid channels are formed in the  
substrate, and a height of the liquid channel in a  
center portion of the liquid supply port is lower  
25 than that of the liquid channel in an opening edge  
portion of the liquid supply port.

10. The liquid discharge head according to Claim 7, wherein a sectional shape of a bubble generating chamber provided above a liquid discharge energy generating element has a protruded form.

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11. An ink-jet head including therein the liquid discharge head according to Claim 7.

12. An ink-jet head including therein the  
10 liquid discharge head according to Claim 8.

13. An ink-jet head including therein the liquid discharge head according to Claim 9.

15 14. An ink-jet head including therein the  
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liquid discharge head according to Claim 10.